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ABSTRACT

This study explores the influence of personal values in problem-solving processes used by elementary school principals responding to the introduction of computers to their schools. Hodgkinson's values hierarchy was used to define actions that more rational frameworks might dismiss or explain inadequately. The hierarchy included three types of values: transrational values grounded in ethics or principles, rational values based on an individual's assessment of consequences or consensus, and subrational values related to personal preferences. Study data were collected through interiews with a school system's 15 principals and used to produce individual case studies and a cross-case analysis. Results showed that principals' personal values significantly influenced their actions, particularly when the initial decision to adopt computers was made. Most principals based their responses on values of consensus and consequences. Principals whose perceptions initially favored either ethics or personal preference seemed to shift gradually over time toward consequences. Data relating to the influence of personal values provided additional insights extending beyond those furnished by planned change, school improvement, or principal effectiveness research perspectives. Because generalization from these study data is difficult, further research is necessary to determine if the value orientations examined here are characteristic responses to the adoption of computers only or typical for most educational innovations. Included are 12 references. (MLH)

THE INFLUENCE OF VALUES ON PRINCIPALS' PROBLEM-SOLVING PROCESSES: AN EMPIRICAL STUDY

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Abstract

The purpose of the research was to inquire into the influence of personal values on problem-solving processes employed by elementary principals as they responded to the introduction of computers to their schools. A values hierarchy suggested by Hodgkinson (1978) was used to give meaning to actions that more rational frameworks might dismiss or not explain adequately. This hierarchy included three types of values: transrational values grounded in ethics or principles, rational values based on an individual's assessment of consequences, rational values based on an individual's assessment of consensus, and sub-rational values related to personal preferences.

Data for the study were collected through interviews with fifteen principals in one school system. From these data individual case studies and a cross-case analysis were produced. The personal values of principals were found to have been important influences on their actions particularly when the initial decision to adopt computers was made. The value grounding of most principals' responses to computer use in schools was found to be at the level of consensus and consequences. Those principals whose perceptions were initially more characteristic of either ethics or personal preference seemed to gradually shift their level of grounding over time towards consequences. Data relating to the influence of personal values provided additional insights extending beyond that possible with the planned change, school improvement or principal effectiveness research perspectives.

THE INFLUENCE OF VALUES ON PRINCIPALS' PROBLEM-SOLVING PROCESSES: AN EMPIRICAL STUDY

This study was part of a long-term research program aimed at exploring the nature, causes, and consequences of school administrators' practices (see Leithwood & Montgomery: 1982, 1986; Leithwood & Stager: 1986, 1987; Trider:1985 and Leithwood & Begley:1986). The early stages of this research focussed primarily on what principals' do - their practices. In an effort to better understand the reasons for such practices, attention within the research programs has shifted more recently to the causes of such practices and in particular, the internal mental states or processes which mediate potential influences in the external environment and principals' actions. Based on this research school administrators' problem-solving processes appear to be crucial to an understanding of why principals act as they do.

A number of influences on principals' problem-solving processes have been identified. For example, as principals gain experience, they report more reflection on problem-solving and the development of more refined and considered processes for dealing with problems encountered in the operation of their schools: they are more aware of problem-solving as an activity and are better able to articulate the values they bring to bear on their problem-solving processes. (1986:22) What has not been clarified to date, however, are just what is the nature of such values and how they compare as influences on principals in relation to other potential influences in the local school

context. Contributing to such clarity was the purpose for this research.

Framework:

The work of Christopher Hodgkinson (1978) provided a useful, if relatively unverified, theoretical framework for conceptualizing the nature of personal values used by administrators (see Figure 1). Hodgkinson defines "value" as: "a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action (Hodgkinson:1978:121). His analytical model of the value concept, which structures this inquiry identifies three types of values:

1. The transrational value grounded in principle.
2a. Rational values based on an individual's assessment of consequences, the attainment of wha.. is perceived as right.
2b. Rational values based on an individual's assessment of consensus, again, the attainment of which is perceived as right.
3. Sub-rational values related to personal preferences or what is perceived as good.

Hodgkinson prefers to outline the three values in a reverse order, starting with type 3 and working up from there to the other two value types. Type 3 values represent a conception of what is "good". Briefly summarized, Type 3 values are grounded in the individual affect and constitute the individual's

preference structure, they are self-justifying and primitive. The remaining two value types more accurately represent a hierarchy of values, differentiated on a continuum of "rightness" or correctness of value. Each of the two higher levels of the model describes a "rightness" that, according to Hodgkinson, is higher than the one below it. Type 3 values, unlike the others, represent what is "good" as opposed to "right".

Type 2 values are associated with what is right; Type 2b relating to consensus or the will of the majority in a given collectivity, and Type 2a to a desirable future state of affairs or analysis of the consequences entailed by the value judgement. Type 2 values are rational whereas Type 3 values are sub-rational and Type 1 values are transrational.

Type 1 values are grounded in principle, they are metaphysical and take the form of ethical codes, injunctions, or commandments. Like any value, they are not scientifically verifiable and cannot be justified by logical argument. They are based on will rather than on reason. Adoption of type 1 values implies some act of faith, belief, or commitment. (1978: 112-113) A diagrammatic representation of Hodgkinson's model of the value concept is included as Figure 1.

Three postulates are associated with Hodgkinson's model:

. Type 1 values are superior, more authentic, better justified, or more defensible than the other two types (there is a hierarchy of rank among the three value types);

• Values tend to lower their level of grounding over time, losing their authenticity, or their force of moral insight;

• Value conflicts, particularly in administration, are resolved at the lowest possible level of the values hierarchy (individuals seek to resolve moral issues at lower levels of value rank) (1978:116).

Grounding	Psychological Correspondences	Philosophical Correspondences	Types of Values
Principle	Conative	Religionism Existentialism (transrational) Ideologism	1
"Right"	Consequences (2a)		
	Cognitive	Humanism Pragmatism Utilitarianism	2 (rational)
	Consensus (2b)		
VALUE			
"Good"	Preference		
	Affective	Logical Positivism Behaviorism Hedonism	3 (sub-rational)

Figure 1 Hodgkinson's Model of Administrati- Values

In addition to the nature of values used by administrators, the study also inquired into their influence on principals in comparison with a wide range of other factors. Preliminary identification of such factors involved a wide-ranging review of research on planned change and school improvement.

Method:

Fifteen elementary school principals (about two thirds of the principals in one school system) were interviewed as part of this study. Each interview was tape recorded and later transcribed. Copies of the transcription were given to each principal who had the option of withdrawing from the study at that time as had been promised beforehand. None chose to withdraw.

Interview data were examined for evidence of influences on principals derived from three different lines of inquiry; planned change and school improvement research, principal effectiveness research, and theoretical models of the influence of values and prior experiences. Potential influences on principals identified by a review of planned change and school improvement literature were classified as (a) perceptions of the innovation (Huberman & Miles:1984), (b) contextual conditions (Corbett, Dawson & Firestone:1984), (c) influence of people (Clark Lotto & Astuto:1984), and (d) critical events (Hall & Hord:1984). Statements made by principals during the interviews were coded when they addressed potential influences within these categories. For example, if a principal made reference to staff turnover as an influence on computer use in the school, that statement was coded as reflecting one of the factors in the contextual conditions category.

A second type of data analysis was structured around the four dimensions of principal practice (goals, factors, strategies, & decision-making) used by Leithwood and Montgomery

to describe growth in principal effectiveness. Statements made by principals relevant to each of these dimensions were coded and subsequently used to estimate the overall pattern of practice favoured by the principal at least in responding to micro-computers.

The third type of analysis reflected the primary focus of this study. It addressed separate sets of criteria pertaining to the personal context of the principals. The first set of criteria were derived from Hodgkinson's value model (1978). Value of preference statements (eg. "I have always enjoyed tinkering with electronics") were fairly simple to identify, as were statements reflecting values of "rightness" grounded in consensus (eg. "the Ministry requires us to...") and/or consequence (eg. "I have observed computers to be effective tools for language instruction in grade 7"). However, statements reflecting values of principle were often difficult to classify accurately or reliably.

Part of the problem was that the grounding of principals' valuing of computers frequently changed over time. For example, Bernadette of Case #1 appeared to have been initially influenced by values of principle in adopting computers as an innovation. However, as she gained expertise and experience with computers over the years she was more able to rationalize her actions with statements reflecting values of consensus and particularly values of consequence. The basis of her valuing was clearly the "rightness" of computer use, the difficulty was knowing whether

or not that rightness was grounded in trans-rational values. For the purposes of the study, statements which suggested that the "rightness" of an action or belief went beyond a grounding in consensus or consequence and implied a higher transrational principle were coded as values of principle. (eg. "If we believe that our life is a gift then...we should use all the potential that has been given to us.")

The term "statement" was used to describe a coded section from a transcript in the case reports and cross-site analysis without regard to length. Because of the three different levels of analysis, a single passage or statement may have had several codes attached. On the other hand, some of the listed criteria were not identified in any of the interviews or found to be redundant because of over-lapping terms and therefore not used. In effect this list of criteria represented factors which were at least potentially operative in a school setting although some factors, such as "Availability of School Resources", appeared to be operative in every setting.

Most statements coded as value-based were not the result of direct questions about values or principals' perceptions of values as influences on their practices. They were more typically produced by questions posed early in the interview about perceptions of computers and their use in society, what is good and bad about computers, and how they ought to be used in schools. The manner in which principals responded to such questions usually revealed fairly clear orientations or

rationales for action that could be coded as reflecting a concern for personal preference, consensus, consequences, or principles. In only a few cases did direct questioning about the influence of values produce statements which could be coded as value-based.

In general, the data organized along the dimensions suggested by planned change, school improvement and principal effectiveness research were interpreted according to the explicit values reported by each principal. However, to accommodate changes in attitude and circumstance over time, a further distinction was sometimes made about perceived influences "early in the process" and "later in the process" (Huberman & Miles: 1984). The degree of influence for each factor was assessed as high, medium or low if it was evident at all. The result was fifteen individual case descriptions of principals' responses over time to the introduction of micro-computers in their school system. Each case was organized around key dimensions suggested by research and reflecting their values, beliefs and prior experiences. The cross-case analysis compared and contrasted the findings for the fifteen principals.

Results:

Relevance of the Four Categories of Values: Table 1 indicates that the values considered relevant to principals in their decisions about computers were primarily values of consequences and consensus. The following two statements, taken from different interviews, illustrate the two value orientations. The first was coded as a value of consequence, the second as a value of consensus:

> So the sooner the children become aware of some of these tools and overcome any fear or novelty that goes with them, the sooner they adapt to them and know how to use them, then the sooner we can use them (computers) to help them to be really well-educated and go forward.

> they reorganized the Ministry of Education in order to make...a (new) department which is the Technology Branch which did not exist three years ago and it was to deal basically with computers and looking into the future in technology...that's going to put a buzzer on to a lot of people to go ahead with it, and it did me too, because then you're sure when you see the millions of dollars the Ministry is pouring into it, this is no fad.

The decisions of these principals in response to the availability of computers were influenced predominantly by what they perceived as the consequences of computer use and the consensual support for computer use in schools. Even principals who were not convinced of the merit of computer use in schools, described their reservations in terms of the negative consequences of computer use such as wasting valuable instructional time.

Few principals, among the fifteen interviewed, referred to values of preference. However, one principal reflected:

> And I have to admit, I'm not sure I'm using the right word, bored easily, but we're always looking for something new and something different, and I was very, very curious about the things, and so I just wanted to get my hands on the things very quickly, so I guess I could say out of curiousity....So I said, I want to get one of those bloody things in here.

Those who initially acquired computers based on personal preference (eg. personal interest in electronics) gradually changed the value grounding of their decisions and actions over time to values of consequence and / or consensus.

Although not common, a few individuals mentioned values of principle to justify their actions in response to computers. In these cases, the absence of much personal knowledge or skill in the use of computers was compensated for by principals' general philosophy of life or beliefs about education. This is illustrated in two interview excerpts:

> I think my general viewpoint of anything of this nature is that if it's something new, we should understand it, and we should be able to use it. I think our learning goes forward along with our society, and that if we draw back from that, then we cut ourselves off from that link with our society....

> Whatever we pass on, we try to pass on the best to the next generation so it can be bigger, better and greater at least. The way our society is going now it's hard to keep the values up. It's something which is sometimes discouraging, but it's very important.

We do not know whether these individuals eventually would have responded positively to the availability of computers

because of the weight of consensual pressure for this innovation which developed over time.

Table 1: Value-Based Statements; Percentage By Type

Case	V Total # (100%)	% Ethics	% Conseq.	% Consen.	% Prefer.
1. Bernadette	39	13%	60%	13%	15%
2. Henry	21	0%	57%	14%	29%
3. Carl	16	0%	56%	25%	19%
4. Calvin	42	2%	33%	45%	10%
5. Kevin	19	21%	68%	0%	11%
6. Oscar	28	43%	21%	21%	11%
7. Kirk	30	17%	53%	17%	13%
8. Zelda	40	23%	18%	57%	18%
9. Pat	20	5%	40%	10%	45%
10. George	21	5%	43%	38%	14%
11. Bob	21	0%	52%	48%	19%
12. Ken	34	15%	47%	24%	15%
13. Ted	23	30%	39%	22%	9%
14. Mike	36	22%	36%	28%	14%
15. Norman	27	19%	52%	19%	11%
Means Overall	28	14%	45%	25%	17%

Alternative Expressions of the Four Categories of Values:

Each of the four general categories of values were expressed by principals in a variety of specific ways. Table 2 summarizes these alternatives and the number of interviews in which the alternatives were evident. Some of these alternatives appeared frequently. For example, most interviews produced statements reflecting values of consensus. The most frequent form this value category took was a concern about teachers responses to computers. The consensual support of teachers was a relatively important influence on principals' decisions to adopt and implement computers; much more important than parents, the school board or the ministry, for example.

The perceived instructional relevance of computers was also mentioned frequently in interview statements coded as values of consequences as were the consequences of computer use for society, in general. Some principals were preoccupied with the potential for misuse of this new technology.

While few principals mentioned values of principle, those that did frequently spoke of student needs and their own responsibilities as school leaders. These two specific expressions of the values of principle category were the most common among the six identified in Table 2.

Relationships Between Values And Other Influences: Principals who were highly experienced were inclined to make more value-based statements during their interviews than were their less experienced colleagues. On the other hand, age could not be strongly linked with either the frequency or type of value statements made by the principals. Similarly, principals' level of computer literacy did not seem related to frequency or type of value used.

Principals who were not the initial adopters of the innovation in their schools made fewer value-based statements than did the initial adopters. They had not been required to develop as clear a value position towards the use of computers as had principals who were initial adopters.

Table 2:Specific Expressions Of Each Value Category

Value Type	Theme	Frequency
Value of Preference:		
	Technical Orientation	3
	Fads or Trends	2
	Educational Change	5
	Preferred School Tone	5
	No Interest In Computers	5
	Interested In Computers	3
Value of Consensus:		
	Ministry of Education	5
	Teachers	11
	Society	3
	School Board	4
	Other Schools	5
	The Community	7
	Parents	5
Value of Consequence:		
	Instructional Use of Comp.	14
	Tool	3
	Society	9
	Students	5
	Teachers	2
	General Consequences of Use	4
	Misuse of Computers	9
Value of Principle:		
	Personal Philosophy	4
	Technological Change	4
	Professional Responsibility	6
	Principal's Role	4
	Students	9
	Values	3

Summary and Conclusion:

The intent of this study was to describe the relative significance of personal values, and the various factors identified by school improvement literature, as influences on the actions of fifteen principals. This research demonstrated that the personal values of these individuals influenced their responses to computers as an educational innovation in significant ways, particularly when the decision to adopt computers was first made. Most principals' based their decisions on values of consensus and consequences. Those principals whose decisions were initially guided more by values of principle or personal preference seemed to be gradually more influenced by values of consequences. More generally, useful as the influences identified in planned change and school improvement research were, they provided a limited explanation for the decisions of principals.

Data from the study are sufficiently exploratory that suggesting implications for practice is clearly premature. However, several implications for theory and research are offered, by way of conclusion.

Implications For Theory: Herbert Simon's (1945) framework of organizational decision-making raised the spectre of a value free administrator. According to this functionalist perspective, effective administrators should pursue organizational goals without reference to their personal values - a separation of personal and organizational goals. This study suggests that even

administrators who appear least influenced by personal values on the surface are quite influenced at least by values of consensus.

Postulate 2 of Hodgkinson's value model suggests that values tend to lower their level of grounding over time, losing their authenticity, force, or moral insight. While the data gathering procedures did not not produce a great deal of information about changes in perceptions over time, in at least two cases out of the fifteen the data appear inconsistent with Hodgkinson's second postulate. Two principals among the fifteen appear to have initially adopted computers based on personal preferences. After accumulating some experience with the innovation, they rationalized the continued use of computers in terms of values of consequence. On the other hand, two other cases do appear to confirm the second postulate. Two principals rationalized their initial adoption of computers on the basis of principle, but lowered the level of grounding to values of consequence as they gained experience with computers and observed the outcomes of their use in the schools. The change in values on which principals based their decisions is better described as towards the centre of the values hierarchy, a shift up or down towards values of consequence or values of consensus; not just down the hierarchy.

While these findings imply a need to re-examine Postulate 2, this centering action may be characteristic of people's changing value responses towards innovations over time rather than a total refutation of Hodgkinson's second postulate. It may also suggest

that the hierarchy could be redrawn to distinguish the practical or professional interests of administrators from the broader interests of philosophers. For administrators, if a hierarchy exists, values of consequence merit placement at the apex. Justification for such placement, aside from its consistency with empirical evidence from this study, might be found in the socially and legally defined responsibilities of the principal's role. In these terms, principals are agents of the public will responsible for employing public resources to achieve socially shared images of the educated person. They are not agents acting in response to personally valued principles. As a result, one could argue, consequences for students constitute the "highest" form of justification for their actions - "highest" in the sense of most consistent with their professional responsibilities as public agents.

In a similar vein, Postulate 3 of Hodgkinson's values hierarchy proposes that value conflicts, particularly in administration, are resolved at the lowest level of the values hierarchy possible in a given situation - in effect seeking to avoid moral issues. The study supports this postulate. Some principals appeared to have consciously rationalized their responses to micro-computers as an innovation at the highest level of the values hierarchy. However, because they lacked computer expertise at the earliest stages of the process, this may have been "the lowest level of the hierarchy possible" for them. Less knowledge seems to be necessary to justify actions at the highest level of the values hierarchy. Accordingly, as time

passed and these individuals gained more experience with computers a values centering process began to take effect.

These findings are consistent with results of recent research by Leithwood and Stager (1987) concerning principals' problem-solving strategies. They found that principles or values served to provide structure for problem-solving when principals lacked problem-relevant information or the problem was considered unique. Leithwood and Stager found that such values were rarely acknowledged by principals in response to problems about which much was known.

Hodgkinson (1978) has advocated values training for administrators and this seems consistent with the importance attached to values by principals in this study. Without additional research it is difficult to know what influence values training would have on principals. Further research concerning the relationship between types of values and patterns of principal practice also appears warranted.

Further research is also necessary to determine if the results from this study are representative of principals from other school systems and regions. While the influence of values on principal actions was demonstrated with fifteen principals, it is difficult to generalize from these data about other principals. Similarly, more research is necessary to determine if the value orientations described in this study are characteristic of responses to the adoption of computers only or typical for most educational innovations.

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